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Energy Security - A Discussion Paper

New Brunswick

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ENERGY SECURITY - A DISCUSSION PAPER

New Brunswick

Department of Natural Resources
and Energy
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INTRODUCTION

At the January 30, 1987 Conference of Federal-Provincial-Territorial Ministers of Energy in Ottawa it was agreed that all Provinces and Territories would prepare discussion papers of "Energy Security" for submission to the Federal Government by May 31, 1987. The Federal Government would then prepare a paper for industry and public comment and for further Provincial and Territorial input.

The objective is to prepare a comprehensive report leading to policy statements on Energy Security for Canada.

The Province is pleased to submit the following comments on Energy Security with particular reference to New Brunswick.

GENERAL

New Brunswick believes that the goal of self sufficiency in oil supply should be secondary to that of overall security of supply in energy in all parts of Canada.

Canada and the Province and Territories should consider measures to achieve the maximum reasonable level of security of all energy supplies, not only oil supplies. To strive for "oil self sufficiency" would require bringing on stream oil production from fields which are presently uneconomic. New Brunswick considers this to be both unwise and unnecessary.

New Brunswick and the rest of Atlantic Canada are dependant upon imported oil and hence the risks of supply and world price escalation are of constant concern. In 1985 46% of New Brunswick's energy demand was met by refined petroleum products.

Eighty percent of the world's hydrocarbon resources are stated to exist in the form of coal. Canada is well endowed with large coal reserves in both Western and Eastern regions, however, environmental factors are becoming a growing concern. This is particularly true for the eastern coals which, in the case of New Brunswick, contain up to 8% sulphur and 18% ash.

Security of supply should not be restricted to oil alone but should consider all forms of energy including conventional and alternate energy as well as energy efficiency. Nor should security result in us forgetting that electricity, oil and coal, for example, are international traded commodities like any other.

THE NEW BRUNSWICK ENERGY SCENE

New Brunswick has very limited natural energy sources. The hydro potential has largely been developed and the limited coal resource is high in sulphur (up to 8% sulphur) and is mined with strip rations of up to 60:1. Oil shale potential has been estimated at some 3×10^9 barrels of oil but extraction technologies are not sufficiently advanced to make it an economic fuel supply. A very limited amount of oil and natural gas is produced from the Stoney Creek field, south of Moncton.

The Province does have limited thermal peat deposits located largely in the Northeast, however, development of the resource is not presently economic. The use of wood for space heating and for the production of process steam and electricity at pulp and paper mills has proven to be an important energy source for the Province. Consequently, the Province is continuing to investigate further ways in which to utilize wood to meet the energy needs of the area. Particular emphasis is being placed on finding a market for waste wood and unmerchantable tree species.

The two main resources available to New Brunswick at this time in terms of security of energy supply are: (a) year-round ocean transport access to world oil and coal sources and (b) a diversified electrical power generating system having strong interconnections with neighbouring Canadian and United States utilities.

Oil for electrical power generation or for refining at Saint John is imported from offshore. Very little western crude oil finds its way into New Brunswick. However an adequate pipeline system exists to Montreal from Western Canada as well as from Portland, Maine. Thus in an emergency New Brunswick and other Atlantic Provinces could be supplied with domestic crude by tanker from Montreal or from Portland, if the Montreal-Portland line was reversed. Alternatively, there are several evaporite structures in Eastern New Brunswick which could form underground storage reservoirs for strategic oil supply.

Natural gas is not available to New Brunswick as the transmission system for Western gas ceases at Quebec City and Eastern gas off Nova Scotia would appear to be several years away from production. It may, however, be timely to re-examine the option of natural gas access to New Brunswick.

A reliable supply of reasonably priced electrical power is essential to the well being of New Brunswick; an integral part of the present system is New Brunswick's electricity exports to the U.S. These exports have allowed us to take advantage of benefits from the advancement of unit construction and economies of scale. Exports plus purchases from Hydro Quebec enable New Brunswick to balance its "electrical account" and provide security to supply with planned capacity increases in phase with demand. Electrical energy trade with the New England States and other Canadian Provinces must be free from any obstacles or trade barriers for New Brunswick to maintain the provision of a secure reliable supply of electricity at a reasonable price.

Coal mining in New Brunswick provides a fuel used exclusively for electrical power generation. Despite the high sulphur and ash contents, it is important that coal continue to play a role in electrical power generation in view of security of supply and in consideration of the socio-economic impacts of coal mining to the Minto-Chipman area of New Brunswick. To ensure its continued usage, research and development is required, similar to the demonstration work at Chatham in the circulating fluidized bed unit, as a means of economically reducing sulphur dioxide emissions in high sulphur coals as exist in eastern Canada.

Oil shales occur extensively in South Eastern New Brunswick where reserves are conservatively estimated at 3×10^9 barrels in situ in the Albert Formation. Yields are greater than 50 litres/tonne in beds thicker than 3 m. Current research is ongoing in the co-combustion of oil shale and coal in the Chatham circulating fluidized bed unit, whereby the calcium content in the oil shale captures sulphur dioxide from the coal and the energy content of the shale oil is utilized.

Wood offers a large biomass potential as an indigenous raw material for energy generation in a move to support an "off oil" policy. It is believed that New Brunswick leads Atlantic Canada in the use of wood as a fuel; over 20 commercial establishments and institutions, exclusive of the pulp and paper industry, are heated with wood residues. In 1985 in excess of 52,000 oven dried tonnes of wood displaced 18×10^6 litres of fuel oil. This does not include the large wood fuel tonnages used in the pulp and paper industry.

Conservation and energy efficiency also play a role in reducing demand for imported energy resources. Through a number of Federal- Provincial agreements a wide variety of demonstration projects and studies have helped move New Brunswick towards a greater efficiency in energy use. Work continues today under a Federal-Provincial Agreement.

NEW BRUNSWICK POSITION

1. Self sufficiency as expounded by the former National Energy Program should be secondary to security of supply.

2. Security of supply should involve the total energy spectrum and not focus only on oil and natural gas.

3. Development should be determined by market forces rather than by government subsidization. Governments should not be heavily involved in "private" energy developments such as Hibernia, Sable Island, Beaufort, tar sands, upgraders etc. except perhaps in infrastructure costs. Subsidies must also be considered in light of potential countervailing measures.

4. Governments should work towards creating an investment climate condusive to private sector investment in energy projects including:

   a) Removal of obstacles to foreign investment;

   b) Reasonable taxation for the risk taking private sector, to provide a fair rate of return on investment;

   c) Simplification of procedures for approvals to develop energy projects e.g. environment, social, etc.

5. Subsidization of energy developments should not be used for stimulation of regional development.

6. Consideration of financial assistance to energy projects should not only look at the viability of project and its social benefits but also if other energy projects would achieve the same result at less cost, e.g. a gas pipeline into the Maritimes requiring government assistance should be compared with similar assistance for electricity generation.

7. Expenditures on research and development in Canada in the energy sector have declined from a high of $518 million for fiscal year 1984-85 to $467 million in 1986-87. (Table I) More significantly has been the decline in Federal Government spending, outside of AECL, which declined from $240 million to $163 million over the same time period. Federal government should increase research and development funds for energy research, with particular emphasis on regional distribution to universities, research laboratories and consulting groups. In New Brunswick's case this would include oil shale/coal co-combustion using circulating fluidized bed technology as well as other research into burning New Brunswick coal in an environmentally safe manner.

8. Federal-Provincial Governments should sign Energy Agreements which embrace the total energy spectrum, not just conservation and alternate energy as at present, so that substitution and security will be under constant review and funding directed to most cost effective areas.

9. Energy efficiency or conservation should continue to be studied despite the lower oil prices today. However, conservation projects should be considered on a sound economic basis like other energy projects.

10. The National Energy Board report forecast shortages of light crude in the early 1990's. Canada has, however, vast resources of natural gas and should encourage the use of dual-fuel systems (gas/oil) in areas of the country served by gas. So that in times of supply emergency oil can be made available to areas of the country which do not have access to natural gas.

11. The Federal Government is responsible for ensuring that energy supplies can be readily distributed throughout Canada if there are supply distortions or emergency supply problems. Consideration should be given to:

    a) an "Energy Swap" treaty with U.S. which would provide crude oil or products to eastern regions of Canada in exchange for gas or electricity from any area of Canada;

b) movement of crude by tanker from Montreal to Eastern Canada and/ or reversal of the Montreal-Portland pipeline;

c) strategic underground storage in salt caverns such as at Dorchester, New Brunswick. Such caverns would also enable purchases of crude oil in times of low prices.

12. The world is moving from an oil era into an electrical era and Canada should lean in that direction in cases where economics are not widely different. Lifetime costs of projects should be considered to assess the lower risk of inflation on nuclear and hydro projects which have large front-end capital costs and low operating costs.

13. Energy trade balance with U.S. must be recognized in the benefits to security of supply and price that accrue to many provinces in the "build sooner" concept of electricity generating facilities. Obstacles to the present relatively unhindered trade in electricity must be quickly identified and resolved with our U.S. counterparts.

14. Atlantic Canada is wholly dependant upon imported oil and will likely remain so for the immediate future. However, it must be remembered that we have never suffered shortages (neither 1973 nor 1979).

Despite the growing emergence again of O.P.E.C.'s influence in the oil market place it is believed that O.P.E.C. has shown that they now recognize the need to sell as well as to buy. O.P.E.C. has become more sophisticated and recognized from experience what too high prices bring in terms of substitution and conservation.

Risks to Atlantic Canada's oil supply must also consider greater reliability of sources other than the Middle East, such as the North Sea, Venezuela and Mexico. Two of these sources are non O.P.E.C. and even Venezuela as an O.P.E.C. member may not be subject to the same Middle East pressures, in a crunch.

15. New Brunswick is examining and identifying opportunities for oil substitution through alternate fuels such as wood. Presently studies are underway into cogeneration and parallel generation economics, which under the right circumstances, may identify projects with favourable economics. Similar projects should be examined for biomass fuels in other provinces.

16. Nuclear Energy requires further research and development on waste disposal as well as on public information. Events like Chernobyl have caused a number of European Countries to re-examine the role of nuclear energy in their supply equation. The CANDU reactors have achieved a good success and none better than Point Lepreau I in New Brunswick. New Brunswick remains committed to Canada's nuclear energy program as a safe and secure form of energy supply. A method of reducing the risk factor of 'up front' capital to the level of equivalent coal or oil units is required.

17. Natural gas is unavailable east of Quebec City. An examination of the economics of extending the gas transmission through the Maritimes should be undertaken and compared to alternative investments in energy supply.

CONCLUSION

Canada is faced with two differing views on energy; those of the consuming provinces and those of the producing provinces.

The country must now develop an energy policy which meets today's and future needs. In terms of security of supply New Brunswick believes that:

1. Market forces should be allowed to work in deciding the timing of major energy projects in Canada;

2. All energy forms should be considered in formulating policy on energy security; and

3. The Federal government should ensure that alternative energy supply systems are in place to provide security to all areas of the country.

4. The following energy projects or arrangements would further enhance energy supply security for New Brunswick:

   - The extension of the natural gas pipeline into the region.

   - Modification to the 1000 MWe Coleson Cove oil-fired generation plant which would allow the delivery and burning of coal.

   - Additional nuclear generation capacity at Lepreau.

   - Guarantees that the Federal Government will continue to ensure that all exports of energy to the United States are truly surplus to Canadian needs.

   - Develop coal burning technologies which will continue to make indigenous high sulphur coal an economic fuel supply.

   - Continue to increase the ability to utilize waste wood as a replacement to oil in places where cogeneration and/or heating is required.

   - Energy Swap Treaty with United States which would provide crude oil to eastern Canada in exchange for input from other areas of Canada.

   - Movement of Canadian crude from Montreal to Portland over existing pipeline for delivery by vessel to New Brunswick.

   - Development of underground storage in New Brunswick's salt caverns.

   - Develop additional hydro storage and capacity on the Saint John River. This could be done in conjunction with the United States.

TABLE I

RESEARCH AND DEVELOPMENT EXPENDITURES ON ENERGY

Fiscal Years 1981-82 to 1986-87

(Millions $)

	Federal GOVT. A	AECL B	SUM A & B	PROVINCIAL* GOVT. C	TOTAL R & D EXP. IN CANADA A + B + C
1981-82	132.5	118.7	251.2	107.0	358.2
1982-83	253.2	162.9	416.1	67.1	483.2
1983-84	218.2	170.5	388.7	85.3	474.0
1984-85	240.7	166.8	407.5	110.5	518.0
1986-87E	163.7	188.3	352.0	115.1	467.1

Source: Data provided by Energy, Mines and Resources Energy Policy Sector, June, 1987.

* Includes all provincial governments. July 15, 1987